

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

OFFICE OF WASTE PERMITTING AND COMPLIANCE

FACT SHEET

May 1, 2014

Renewal Hazardous Waste Management Post-Closure Care Permit – Hazardous Waste Management Units 5 & 16

Radford Army Ammunition Plant Radford, Virginia

FACILITY LOCATION:

Route 114, P.O. Box 1
Radford, Virginia 24143-0100

EPA IDENTIFICATION NUMBER:

VA1210020730

FACILITY TYPE:

Radford Army Ammunition Plant (RFAAP) is an operating hazardous waste management facility. The RFAAP encompasses approximately 4,104 acres of land and is located in southwest Virginia in Pulaski and Montgomery Counties approximately 5 miles northeast of the city of Radford, 10 miles west of Blacksburg, and 47 miles southwest of Roanoke. The New River separates Pulaski and Montgomery Counties and also divides the RFAAP into two (2) portions commonly known as the Horseshoe Area and the Main Manufacturing Area (MMA).

In addition to its final Permit for the treatment of hazardous waste by Open Burning and its continued hazardous waste management Post-Closure Care Permit for Hazardous Waste Management Units (HWMUs) 5, 7, 10, & 16, the RFAAP also has an active hazardous waste permitted incinerator located in the north central portion of the Horseshoe Area and a continued site wide hazardous waste corrective action permit. A continued permit is one that has expired but whose terms and conditions continue under regulatory authority pending permit renewal.

INTRODUCTION:

The Virginia Department of Environmental Quality (DEQ) is proposing to issue a Resource Conservation and Recovery Act (RCRA) permit for the hazardous waste post closure maintenance and monitoring at the RFAAP addressing HWMUs 5 and 16. This fact sheet, prepared in accordance with the Virginia Hazardous Waste Management Regulations, as codified in Title 9 of the Virginia Administrative Code, at 9 VAC 20-60-124.8, describes the facility, the proposed hazardous waste management activities and the proposed action.

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ADMINISTRATIVE HISTORY:

The waste management activities at RFAAF became regulated subsequent to the promulgation of Federal hazardous waste regulations under RCRA in 1980. On November 19, 1980, the facility submitted Part A of the RCRA permit application and was subsequently granted "interim status" by the United States Environmental Protection Agency. HWMU-5 was issued a Post-Closure Care Permit on October 30, 1999 by the DEQ. On September 28, 2001, the DEQ issued a separate Post-Closure Care Permit for HWMU-7. Both Post-Closure Care Permits (HWMU-5 and HWMU-7) were revoked as of the effective date of November 4, 2002, of the combined Post-Closure Care Permit issued by the DEQ incorporating HWMUs 5, 7, 10, and 16. This Notice of Revocation was approved by the DEQ on September 30, 2002, under the authority of 9VAC 20-60-270 adopting by reference 40 CFR §270.41(a)(1). The combined Post-Closure Care Permit incorporating the 4 HWMUs expired on November 4, 2012.

On October 3, 2011 the facility submitted Part B of the RCRA renewal permit application for post-closure maintenance and monitoring. Revised Part B permit applications were submitted on February 14, 2012, May 30, 2012, and September 7, 2012. The DEQ has reviewed the most recent application and found it to be complete and technically adequate. Therefore, pursuant to 9 VAC 20-60-124.6 and based on the DEQ approved closures of soils and groundwater associated with HWMUs 7 and 10; the DEQ has prepared a draft permit addressing HWMUs 5 and 16 for the hazardous waste post-closure management activities at the facility.

The current Part A permit application for the facility reflecting the change of HWMUs 7 and 10 to SWMUs was submitted to the DEQ in October of 2013.

WASTE TYPES:

The major products of manufacture at RFAAP are solvent and solventless propellants that include single-, double-, and triple base powders; rocket propellants; as well as Load, Assemble, and Pack (LAP) medium caliber cartridges, larger mortar and artillery charges.

During past operations, wastewater influent, classified as EPA Hazardous Waste Number D002 (characteristic for corrosivity), was discharged into HWMU-5. The wastewater influent included: spills, runoff, and wash down waters from the Acid Tank Farms in the Acid Area. The purpose of HWMU-5 was to collect acidic wastewater prior to discharge to a wastewater treatment system. HWMU-5 will be included in the Post-Closure Permit under development for the facility.

During past operations, wastewater influent, classified as EPA Hazardous Waste Number D002 (characteristic for corrosivity), was discharged into HWMU-7. The wastewater influent included: spills, runoff, and wash down waters from the Acid Tank Farms in the Oleum Plant Area; waste sulfuric acid and caustics from oleum production; and waste caustic mixed with acidic water for neutralization. In a letter dated June 26, 2013, the DEQ approved the closure of HWMU-7 for soils and groundwater and, therefore; HWMU-7 will not be included in the Post-

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Closure Permit under development for the facility and, permit conditions addressing HWMU-7 are removed from the hazardous waste Post-Closure Permit.

HWMU-10 received wastewaters from propellant manufacturing, pretreated wastewaters from nitroglycerine production, and waste from the recovery of ethyl ether. The wastewater was classified as EPA Hazardous Waste Number D030 (toxic contaminant 2, 4-Dinitrotoluene). HWMU-10 will not be included in the Post-Closure Permit under development for the facility. In a letter dated April 2, 2014, the DEQ approved the closure of HWMU-10 for soils and groundwater and, therefore; HWMU-10 will not be included in the Post-Closure Permit under development for the facility and permit conditions addressing HWMU-10 are removed from the hazardous waste Post-Closure Permit.

Hazardous wastes and other waste known to have been disposed of within HWMU-16 included 3,898 tons of ash from the burning of waste explosives and explosives-contaminated material (EPA Hazardous Waste Code D003, D004, D007 and D008; arsenic, cadmium, chromium and lead), 545 tons of wastewater treatment sludges (EPA Hazardous Waste Code K044 and K045, with the characteristic of ignitability, corrosivity or reactivity), 6 tons of asbestos, and various laboratory chemicals. Additionally, the following wastes were disposed of in HWMU-16 in unknown quantities: ash from waste propellant incinerator (EPA Hazardous Waste Code D003), residue from waste propellant burning (EPA Hazardous Waste Code D003), residue from explosive contaminated waste burning (EPA Hazardous Waste Code D003), Sulfur Acid Regeneration (SAR) area fume burner ash (EPA Hazardous Waste Code D006 and D007), sludges from Bioplant Building 470 (EPA Hazardous Waste Code K044), and NG 2 Pretreatment Building 9410 (EPA Hazardous Waste Code K044). HWMU-16 will be included in the Post-Closure Permit under development for the facility.

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UNIT DESCRIPTION:

Final Hazardous Waste Management Post-Closure Care Permit – Hazardous Waste Management Units 5 & 16

HWMU-5 is a closed lined neutralization pond that received stormwater runoff, spilled liquids, and washdown waters from the acid tank farm area. HWMU-5 will be included in the Post-Closure Permit under development for the facility.

HWMU-16 is located within the Horseshoe Area of the New River and is a hazardous waste trench located within a solid waste landfill. Several sources, the Soil Conservation Services and consultant reports, indicated that the unit is located within a karst dominated area. The unit is underlain by clay, silty sands, gravels, and limestone. The clay and silt deposits can be up to 38 feet thick. The overburden materials are terrace deposits. The bedrock is the Elbrook Formation which is encountered at a depth of 50 to 60 feet on the west end and at 70 feet on the east end. The formation is highly fractured and fragmented with breccia, vugs, and solution channels. HWMU-16 will be included in the Post-Closure Permit under development for the facility.

FACILITY DESCRIPTION:

RFAAP is located in southwest Virginia in Pulaski and Montgomery Counties approximately 5 miles northeast of the city of Radford, 10 miles west of Blacksburg, and 47 miles southwest of Roanoke. The New River separates Pulaski and Montgomery Counties and also divides RFAAP into two (2) portions commonly known as the Horseshoe Area and the MMA. RFAAP encompasses approximately 4,104 acres of land

PROJECT DESCRIPTION:

UNIT 5

The concentration of trichloroethene (TCE) in groundwater has exceeded the Groundwater Protection Standards (GPSs) in the point of compliance (POC) Wells 5W5B, 5WC21, 5WC22 and 5WC23 since the issuance of the original permit for Unit 5 on September 28, 2001.

A Corrective Action Plan (CAP) for Hazardous Waste Management Unit (HWMU) 5 (Unit 5), has been completed in support of the Hazardous Waste Management Post Closure Care Permit for RFAAP. The groundwater Corrective Action (CA) and monitoring program focused on evaluating the natural attenuation of TCE and its daughter products [1,1-Dichloroethene (1,1-DCE), cis-1,2-Dichloroethane (cDCE), trans-1,2-Dichloroethene (tDCE), and Vinyl Chloride (VC)] in the subsurface at Unit 5. The plume is stable and/or decreasing.

Monitored natural attenuation was the technology chosen to address the TCE contamination. Natural Attenuation is the reduction of chemical of concern (COC) concentrations in the environment through destructive biological processes (including, but not limited to; aerobic and

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anaerobic biodegradation, plant and animal uptake), non-destructive physical mechanisms (advection, dispersion, diffusion, dilution, volatilization, sorption/desorption), and chemical reactions (ion exchange, complexation, decomposition, and abiotic transformation). Biodegradation of chlorinated solvents (e.g., TCE) most commonly occurs via reductive dechlorination, a process that requires both electron acceptors (chlorinated aliphatic hydrocarbons) and an adequate supply of electron donors (natural organic carbon, fuel hydrocarbons, landfill leachate) in order to proceed to complete destruction. It is, therefore, a passive remedial approach reliant upon natural transport and degradation processes.

The goal of this CA measure, through performance monitoring, is to measure and track the reduction of chlorinated Volatile Organic Compounds (VOCs) to levels below the GPSs. During natural attenuation, multiple processes such as dispersion, diffusion, dilution, sorption, volatilization, biological degradation and chemical decomposition of COCs result in an effective reduction of contaminant concentration, toxicity, mobility, or volume to levels that are protective of human health and the ecosystem. The daughter products of TCE will be monitored and evaluated to determine the progress (effectiveness and timeliness) of the degradation process. It is predicted that it will take 19 years to achieve the remedial objective at this unit.

If the predicted attenuation rates based on future monitoring data exceed 12 years (2019) for three successive monitoring years, then contingency activities will be implemented. Contingency activities potentially include additional monitoring, data collection, and/or enhanced in-situ anaerobic degradation or similar in-situ technology.

UNIT 16

Since 1993, monitoring has been implemented under post closure compliance monitoring.

The primary contaminants of concern at Unit 16 are lead, the explosive-related compounds (2,4,6-TNT; 2,4-DNT and 2,6-DNT), several purgeable organic compounds (acetone, ethyl ether, and toluene), and a few of the base-neutral extractable organic compounds (specifically di-n-butyl phthalate, diethyl phthalate, dimethyl phthalate, di-n-octyl phthalate, and resorcinol).

Monitoring well 16C1 is the background (upgradient groundwater monitoring) well for Unit 16 and the downgradient groundwater monitoring wells 16MW8, 16MW9, 16WC1A, and 16WC1B are the point of compliance wells. In addition, four (4) wells, 16-2, 16-3, 16-5 and 16WC2B, serve as plume monitoring wells downgradient of the unit. The Spring (16SPRING) serves as an additional sampling point. These five monitoring points are used to determine whether continued migration of contaminants is occurring. Four wells, 16-1, 16WC2A, 16C3, and 16CDH3, are used as piezometers to measure static groundwater elevations during each sampling event.

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If additional constituents on the monitoring list are detected at statistically significant levels above background in the Plume Monitoring Wells and if there is evidence that changes in the nature or extent of groundwater contamination have occurred, the Facility is required to install groundwater monitoring wells to further define the vertical and horizontal extent of contamination.

PURPOSE OF PERMITTING PROCESS:

The purpose of the permitting process is to afford the Virginia Department of Environmental Quality (DEQ), interested citizens, and other governmental agencies the opportunity to evaluate the ability of the Permittee to comply with the applicable requirements of the VHWMR and the RCRA. The draft Post-Closure permit sets forth in one concise document all the requirements with which the Permittee must comply during the ten year duration of the permit.

COMMENT PERIOD:

Begins: May 1, 2014
Ends: June 19, 2014

The public is given a minimum of forty-five (45) days to review and comment on the Draft Hazardous Waste Post-Closure Permit. A public meeting and a public hearing will be held in succession at 7 pm and 7:45 pm respectively at the New River Valley Business Center (6580 Valley Center Drive, Radford, VA 24141) on Wednesday, June 4, 2014. All persons, including the Permittee, who believe the tentative decision to grant this permit modification is inappropriate must raise all ascertainable issues and submit all available arguments and factual grounds supporting their position by June 19, 2014. Copies of such comments should be sent to:

Virginia Department of Environmental Quality
Office of Waste Permitting and Compliance
ATTN: Russell McAvoy, Environmental Engineer Senior
P.O. Box 1105
Richmond, Virginia 23218
Phone No. (804) 698-4194
Fax No. (804) 698-4234
e-mail russell.mcavoy@deq.virginia.gov

The DEQ will also accept comments from the public by e-mail. All comments received must include the full name, mailing address, and phone number of the person generating the comments.

PUBLIC HEARING:

A public meeting and a public hearing will be held in succession at 7 pm and 7:45 pm respectively at the New River Valley Business Center (6580 Valley Center Drive, Radford, VA 24141) on Wednesday, June 4, 2014.

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PUBLIC INFORMATION:

The public may review the Draft Hazardous Waste Post-Closure Permit, the application, and this draft fact sheet at the following locations:

DEQ Blue Ridge Regional Office
Contact: Aziz Farahmand
3019 Peters Creek Road
Roanoke, VA 24019
Phone: (540) 562-6700
* Every work day by appointment

DEQ Office of Waste Permitting and Compliance
Contact: Russell McAvoy
629 East Main Street
Richmond, VA 23219
Phone: (804) 698-4194
* Every work day by appointment

Christiansburg Branch of the Montgomery-Floyd Regional Library
System
125 Sheltman Street
Christiansburg, VA 24073
Phone: (540) 382-6965
* During normal hours of operation

PROCEDURES FOR REACHING A FINAL DECISION:

When making the final determination to issue the Hazardous Waste Post-Closure Permit to RFAAP, the DEQ will consider all written comments received during the comment period, any oral or written statements received during the public hearing, and the requirements of (VAC 20-60-264 and 270 of the VHWMR. Each person that has submitted comments in accordance with this public notice period will receive a written response from the DEQ. Thereafter, the final Permit shall become effective immediately upon issuance.

PERMIT ORGANIZATION AND CONDITIONS:

Post-Closure Care Permit – Hazardous Waste Management Units 5 & 16

The permit is divided into eight (8) sections as outlined below.

<u>Section</u>	<u>Topic</u>
Module I	Standard Conditions
Module II	General Facility Conditions

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Module III	Post-Closure Care
Module IV	Groundwater Detection Monitoring
Module V	Groundwater Compliance Monitoring
Module VI	Groundwater Corrective Action & Monitoring Program for Unit 5
Module VII	Site-Wide Corrective Action
Module VIII	Schedule of Compliance

Parts I and II of the permit contain conditions, which generally apply to all hazardous waste management facilities. Parts III, IV, V, VI, VII and VIII pertain more specifically to the permitted hazardous waste management operations at RFAAP.

The following three (3) permit attachments are incorporated into the permit by reference. Each attachment is considered an enforceable condition of this permit. The permit attachments are specified as follows:

List of Permit Attachments

ATTACHMENT 1

Appendix A	Facility Location Maps
Appendix B	Contingency Plan
Appendix C	Closure Notices and Post-Closure Plans
Appendix D	Facility Contact Representative
Appendix E	Security Provisions and Maintenance
Appendix F	Inspection Requirements
Appendix G	Personnel and Training
Appendix H	Groundwater Compliance Monitoring Program - SAP

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Appendix I	Appendix IX to 40 CFR Part 264: Annual Groundwater Sampling Constituent List
Appendix J	Statistical Procedures
Appendix K	Methodology for Groundwater Monitoring Well Abandonment

ATTACHMENT 2 – Unit 5 Information

Appendix A	Unit Hydrological and Geological Information
Appendix B	Reserved
Appendix C	Description of Wastes
Appendix D	Contingency Plan (<i>Refer to Permit Attachment 1 Appendix B</i>)
Appendix E	Compliance Groundwater Monitoring Constituent List
Appendix F	Initial Groundwater Background Data
Appendix G	Groundwater Protection Standards
Appendix H	Boring Logs and Well Construction Diagrams: Unit 5
Appendix I	Corrective Action Plan for Hazardous Waste Management Unit 5
Appendix J	CA Targeted Contaminants – GPS and Semi-Annual Monitoring List for HWMU-5
Appendix K	(Reduced) Annual Monitoring Constituents in Appendix IX to 40 CFR 264

ATTACHMENT 3 – Unit 16 Information

Appendix A	Unit Hydrological and Geological Information
Appendix B	Reserved

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Appendix C	Description of Wastes
Appendix D	Contingency Plan (<i>Refer to Permit Attachment 1 Appendix B</i>)
Appendix E	Compliance (Quarterly) Groundwater Monitoring Constituent List
Appendix F	Initial Groundwater Background Data
Appendix G	Groundwater Protection Standards
Appendix H	Boring Logs and Well Construction Diagrams: Unit 16
Appendix I	Geophysical Investigation and Survey